

California Methane Inventory for 2000-2020 — by IPCC Category
million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessment Report's 100-yr Global Warming Potentials)
Included Emissions
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

1 - Energy	6.6	6.7	7.0	6.8	6.8	7.1	7.3	7.0	7.1	7.0	7.0	7.3	7.1	7.3	7.2	7.2	7.2	7.2	7.3	7.2	7.1
1A - Fuel Combustion Activities	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.5	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4
1A1 - Energy Industries	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1										
1A1a - Main Activity Electricity and Heat Production	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
1A1ai - Electricity Generation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1A1a ⁱⁱ - Combined Heat and Power Generation (CHP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A1b - Petroleum Refining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A1c - Manufacture of Solid Fuels and Other Energy Industries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A1c ⁱⁱ - Other Energy Industries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A2 - Manufacturing Industries and Construction	0.1	0.1	0.0																		
1A2d - Pulp, Paper and Print	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A2e - Food Processing, Beverages and Tobacco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A2f - Non-Metallic Minerals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A2g - Transport Equipment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A2h - Machinery	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A2i - Mining (excluding fuels) and Quarrying	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A2j - Wood and Wood Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A2k - Construction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A2l - Textile and Leather	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A2m - Non-specified Industry.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3 - Transport	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
1A3a - Civil Aviation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3a ⁱⁱ - Domestic Aviation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3b - Road Transportation	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
1A3b ⁱ - Cars	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1A3b ⁱⁱ - Light-duty Trucks	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1A3b ⁱⁱⁱ - Heavy-duty Trucks and Buses	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3b ^{iv} - Motorcycles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3c - Railways	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3d - Water-borne Navigation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3d ⁱ - International Water-borne Navigation (International Bunkers)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3d ⁱⁱ - Domestic Water-borne Navigation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3e - Other Transportation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3e ⁱⁱ - Off-road	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A4 - Other Sectors	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
1A4a - Commercial/Institutional	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A4b - Residential	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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million tonnes of CO₂ equivalent - (based upon IPCC Fourth Assessment Report's 100-yr Global Warming Potentials)

Included Emissions

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1A4c - Agriculture/Forestry/Fishing/Fish Farms	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1B - Fugitive Emissions from Fuels	5.7	5.7	6.1	5.9	6.0	6.3	6.5	6.3	6.4	6.4	6.4	6.7	6.5	6.6	6.6	6.7	6.7	6.8	6.9	6.8	6.7
1B1 - Solid Fuels	0.0																				
1B2 - Oil and Natural Gas	5.6	5.7	6.1	5.8	5.9	6.2	6.5	6.3	6.4	6.3	6.4	6.5	6.4	6.5	6.5	6.5	6.5	6.7	6.7	6.6	6.6
1B2a - Oil	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0
1B2ai - Venting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1B2aii - Flaring	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1B2aiii - All Other	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0
1B2b - Natural Gas	4.4	4.5	4.8	4.6	4.7	4.7	4.9	4.8	4.9	5.0	4.9	4.9	4.8	4.9	4.9	5.0	5.0	5.0	5.0	5.0	5.1
1B3 - Geothermal Energy Production	0.0	0.1	0.2	0.1																	
3 - Agriculture, Forestry and Other Land Use	18.5	18.7	19.9	20.4	19.7	20.3	20.5	22.9	22.8	22.2	22.8	22.7	23.2	22.7	22.7	22.1	22.0	22.1	22.1	22.0	21.9
3A - Livestock	17.7	18.0	19.1	19.5	18.8	19.4	19.7	22.0	22.0	21.4	21.9	21.8	22.4	21.8	21.9	21.4	21.1	21.4	21.4	21.1	21.1
3A1 - Enteric Fermentation	9.9	9.8	10.4	10.5	10.3	10.5	10.6	11.7	11.5	11.1	11.6	11.4	11.5	11.2	11.3	11.0	10.9	11.1	11.1	11.0	11.0
3A1a - Cattle	9.5	9.4	10.0	10.1	9.8	10.1	10.1	11.2	11.0	10.6	11.1	10.9	11.0	10.7	10.8	10.4	10.4	10.7	10.6	10.5	10.5
3A1ai - Dairy Cows	6.4	6.3	7.0	7.0	6.9	7.0	7.2	8.0	7.9	7.6	8.1	8.0	8.1	7.8	7.8	7.6	7.6	7.7	7.6	7.6	7.6
3A1aii - Other Cattle	3.1	3.1	3.0	3.0	3.0	3.1	3.0	3.2	3.0	3.0	3.0	2.9	3.0	2.9	3.0	2.8	2.8	3.0	3.0	2.9	3.0
3A1c - Sheep	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
3A1d - Goats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3A1f - Horses	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
3A1h - Swine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3A2 - Manure Management	7.9	8.2	8.8	9.1	8.6	8.9	9.1	10.3	10.6	10.3	10.4	10.4	10.8	10.5	10.6	10.5	10.2	10.3	10.2	10.2	10.1
3A2a - Cattle	7.6	8.0	8.5	8.8	8.3	8.6	8.9	10.0	10.3	10.0	10.1	10.1	10.6	10.3	10.4	10.0	10.0	10.1	10.0	10.0	9.9
3A2ai - Dairy Cows	7.5	7.8	8.4	8.7	8.2	8.5	8.7	9.8	10.2	9.9	10.0	10.0	10.5	10.2	10.3	10.1	9.8	9.9	9.9	9.8	9.8
3A2aii - Other Cattle	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
3A2c - Sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3A2d - Goats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3A2f - Horses	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
3A2h - Swine	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3A2i - Poultry	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
3C - Aggregate Sources and Non-CO₂ Emissions Sources on Land	0.7	0.7	0.8	0.8	0.8	0.9	0.7	1.0	0.7	0.8	0.8	0.9	0.9	0.9	0.8	0.7	0.9	0.7	0.8	0.8	0.8
3C1 - Emissions from Biomass Burning	0.0																				
3C1b - Biomass Burning in Croplands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3C7 - Rice Cultivations	0.7	0.7	0.8	0.8	0.8	0.9	0.7	0.9	0.7	0.8	0.8	0.9	0.8	0.9	0.8	0.7	0.9	0.6	0.7	0.8	0.8

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4 - Waste	8.4	8.5	8.5	8.6	8.6	8.8	8.9	9.0	9.1	9.1	9.2	9.3	9.2	9.3	9.3	9.4	9.5	9.6	9.6	9.7	9.8
4A - Solid Waste Disposal	6.9	7.1	7.1	7.2	7.2	7.4	7.4	7.5	7.6	7.7	7.8	7.9	7.8	7.9	7.9	8.0	8.1	8.2	8.2	8.3	8.4
4A1 - Managed Waste Disposal Sites	6.9	7.1	7.1	7.2	7.2	7.4	7.4	7.5	7.6	7.7	7.8	7.9	7.8	7.9	7.9	8.0	8.1	8.2	8.2	8.3	8.4
4B - Biological Treatment of Solid Waste	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
4D - Wastewater Treatment and Discharge	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1
4D1 - Domestic Wastewater Treatment and Discharge	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8
4D2 - Industrial Wastewater Treatment and Discharge	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Summary for Included Emissions																					
California CH4 Emissions	33.5	34.0	35.5	35.8	35.1	36.2	36.6	38.9	38.9	38.3	39.0	39.2	39.5	39.2	39.2	38.7	38.7	38.9	39.1	38.9	38.8

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1 - Energy	0.4	0.6	0.6	0.6	0.1	0.1	0.6	0.6	0.6	0.0	0.6										
1A - Fuel Combustion Activities	0.0																				
1A3 - Transport	0.0																				
1A3a - Civil Aviation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3ai - International Aviation (International Bunkers)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3aia - International Aviation (International Bunkers)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3aia - International Aviation (International Bunkers)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3d - Water-borne Navigation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A3di - International Water-borne Navigation (International Bunkers)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A5 - Non-Specified	0.0																				
1A5b - Mobile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A5bi - Mobile (Aviation Component)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1B - Fugitive Emissions from Fuels	0.4	0.5	0.6	0.6	0.1	0.1	0.6	0.6	0.6	0.0	0.6										
1B2 - Oil and Natural Gas	0.4	0.5	0.6	0.6	0.1	0.1	0.6	0.6	0.6	0.0	0.6										

Summary for Excluded Emissions

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

International and Interstate CH4 Emissions	0.4	0.6	0.6	0.6	0.1	0.1	0.6	0.6	0.6	0.0	0.6										
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California Methane Inventory for 2000-2020 — by IPCC Category

million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessment Report's 100-yr Global Warming Potentials)

Other Emissions

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

This section of the inventory is currently under development

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